

We claim:

1. A method for supplying current to an electronically commutated electric motor, especially a three-phase direct current motor, by a semiconductor power end stage, with means for measuring the current delivered to said motor and with an electronic controller for controlling branch currents of said motor, said method comprising the steps of:

a) supplying to said electronic controller a signal from a current sensor (24) in a common conductor (26) of semiconductor switches of said semiconductor power end stage, winding terminal voltages (U_1, U_2, U_3) of respective branch windings (16, 18, 20) of said motor and a total supply voltage (U) applied to said semiconductor power end stage; and

b) determining respective conducting state D.C. resistances of the semiconductor switches and said branch currents (I_1, I_2, I_3) with said electronic controller from said signals and voltages supplied to said electronic controller with logical incorporation of control signals ($G_1 - G_6$) produced by said electronic controller.

2. The method as defined in claim 1, wherein said electronic controller computes respective voltage drops in drain-source branches of said semiconductor switches from corresponding differences between said total voltage applied to the semiconductor power end stage and said respective winding terminal voltages (U_1, U_2, U_3) of said branch windings (16, 18, 20).

3. A method for supplying current to an electronically commutated electric motor, especially a three-phase direct current motor, by a semiconductor power end stage, with means for measuring the current delivered to said motor and with an electronic controller for controlling branch currents of said motor, said method comprising the steps of:

a) supplying to said electronic controller a signal from a current sensor (24) in a common conductor (26) of semiconductor switches of said semiconductor power end stage and individual voltages ($U_{DS1} - U_{DS6}$) at respective ones of the semiconductor switches; and

b) determining respective conducting state D.C. resistances of the semiconductor switches and said branch currents (I_1, I_2, I_3) with said electronic controller from said signals and said voltages supplied to said electronic controller with logical incorporation of control signals ($G_1 - G_6$) produced by said electronic controller.

4. The method as defined in claim 3, wherein said semiconductor switches of said semiconductor power end stage are MOSFET transistors ($T_1 - T_6$), said MOSFET transistors have drain-source branches operated as respective current sensors with the help of said individual voltages ($U_{DS1} - U_{DS6}$) and said conducting state D.C. resistances ($R_{DS1} - R_{DS6}$) for said MOSFET transistors.

5. The method as defined in claim 3, wherein said electronic controller is a microcomputer (22).
6. The method as defined in claim 3, further comprising supplying rotary position signals of a rotor position transmitter (28) to said electronic controller to produce said control signals ($G_1 - G_6$) for said semiconductor switches.
7. The method as defined in claim 3, wherein said semiconductor power end stage is a half-bridge circuit, and further comprising acquiring respective terminal voltages ($U_1 - U_3$) of the branch windings of the motor at corresponding connection points of respective connected pairs of said semiconductor switches and supplying said respective terminal voltages to said electronic controller.
8. The method as defined in claim 3, wherein the determining of the respective conducting state D.C. resistances (R_{DS}) of the semiconductor switches takes place at definite time points within respective clock cycles, after transients due to a switch-on process for the semiconductor switches have decayed.
9. An apparatus for supplying current to an electronically commutated electric motor, especially a three-phase direct current motor, with means for determining said current supplied to said motor; said apparatus comprising

a semiconductor power end stage comprising semiconductor switches, said semiconductor switches comprising means for controlling branch currents in branch windings of said motor;

an electronic controller for controlling said branch currents; said electronic controller comprising a microcomputer (22);

a current sensor (24) arranged in a common conductor (26) of the semiconductor switches to supply a signal depending on a current in said common conductor to said electronic controller;

means for supplying terminal voltages (U_1 , U_2 , U_3) of said branch windings (16, 18, 20) to said electronic controller;

a rotor position transmitter (28) for supplying a signal characteristic of a rotary position of a rotor of said motor to said electronic controller as an input signal; and

means for supplying a total voltage (U) applied to the semiconductor end stage or respective individual voltages (U_{DS1} - U_{DS6}) at corresponding ones of said semiconductor switches to said electronic controller;

wherein said electronic controller comprising means for generating control signals (G_1 - G_6) for said semiconductor switches in order to control said branch currents from said signal characteristic of said rotary position of said rotor, said signal from said current sensor (24), and from said respective individual voltages (U_{DS1} - U_{DS6}) at said semiconductor switches or said total voltage applied to the semiconductor end stage and said terminal voltages (U_1 , U_2 , U_3) of said branch windings (16, 18, 20).

10. The apparatus as defined in claim 9, wherein said semiconductor end stage is a half-bridge circuit and said motor is a three-phase electronically commutated direct current motor with branch windings connected in a Y-connection and also connected with corresponding connection points of respective connected ones of said semiconductor switches.